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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/718,478

11/18/2003

Jin-Sung Kim

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EXAMINER

HODGE, ROBERT W

ART UNIT

PAPER NUMBER

1729

MAIL DATE

DELIVERY MODE

11/01/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/718,478	Applicant(s) KIM ET AL.	
	Examiner ROBERT HODGE	Art Unit 1729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-16 and 18 is/are pending in the application.
- 4a) Of the above claim(s) 5-7, 9, 12, 14, 16 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 10, 11 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 5/24/10 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1-4, 8, 10, 11 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the

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invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 09/766,520, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. There is no support for a sulfone based compound present in a range from 0.05 to 0.5wt% in Application No. 09/766,520 as recited in independent claims 1 and 11, the lower limit of Application No. 09/766,520 only goes to 0.1 and therefore any claim that includes the lower limit of 0.05 wt% does not receive the benefit of the earlier filed application, the claims (not including withdrawn claims) that do not receive this benefit include claims 1, 4, 8, 10 and 11. Furthermore no support can be found in Application No. 09/766,520 for C₃ to C₄ alkenyl functional sulfones as recited in claim 1, and therefore claim 1 and any of its dependencies, which includes claims 2-4, 8, 10 are not supported by the earlier filed application and therefore do not receive the benefit of the earlier filed application. Even more so no written description support can be found for R and R' to be a C₃ to C₄ alkenyl as recited in claims 11 and 15, because no working examples are present in Application No. 09/766,520 for the compound that would exist based on said recitation (see 35 U.S.C. 112, first paragraph below for further clarification). Therefore as clarified above claims 1-4, 8, 10, 11 and 15 receive the benefit of the instant applications filing date of 11/18/03 only and will be examined as such.

Claim Rejections - 35 USC § 112

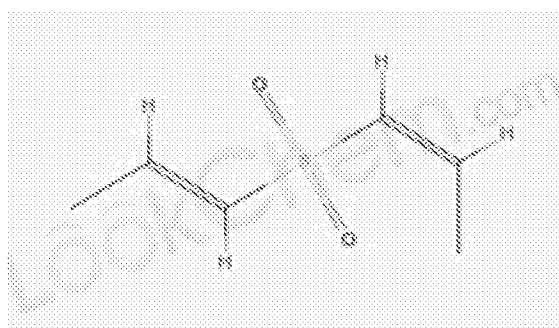
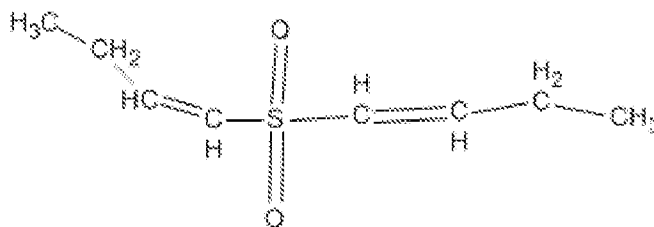
The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4, 8, 10, 11 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As was noted in the Notice of Non-Compliant Amendment dated 8/24/10 the elected species of the instant application are Formula 1 and R and R' to be alkenyl groups. The instant claims have been amended to include that the sulfone based compound can be selected from C₃ to C₄ alkenyl functional sulfones (claim 1) or Formula 1 with R and R' to be C₃ to C₄ alkenyl groups (claims 11 and 15) in order to include an elected species in the instant claims, which as applicants point out is supported on page 5, specifically at line 26, therefore no New Matter has been entered into claims 11 and 15. However the amendments to the claims do not meet Written Description requirement under 35 U.S.C. 112, first paragraph. First, there is no evidence anywhere in the instant specification to show that applicant has in fact invented an electrolyte according to Formula 1, wherein R and R' are a C₃ or C₄ alkenyl group. The only disclosure of C₃ or C₄ alkenyl groups is on page 5, line 26 of the instant specification which includes a laundry list of possible groups that can be used for R and R', which

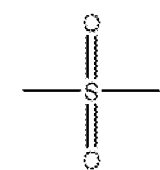
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contains an infinite number of permutations for R and R'. On Page 5, lines 30-32, preferred examples of sulfones according to the instantly disclosed invention are given, however none of the examples include a sulfone having a C₃ or C₄ alkenyl group independently selected for R and R' of Formula 1. The below structures meet the requirements of Formula 1 having a C₃ or C₄ alkenyl group R and R':

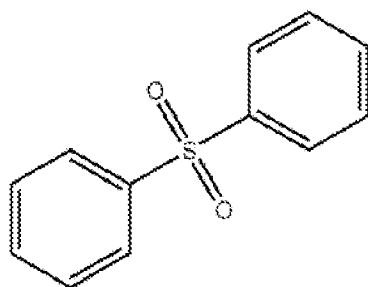
**Propenyl Sulfone****Butenyl Sulfone**

As was cited to applicants on 8/24/10 none of the preferred compounds even remotely resemble the above structures see below:

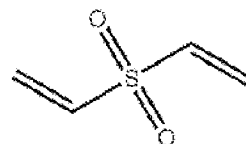
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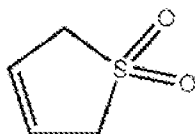
methyl sulfone



phenyl sulfone



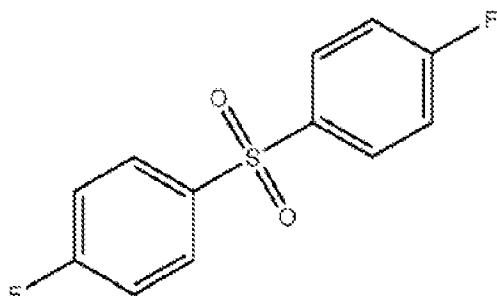
vinyl sulfone



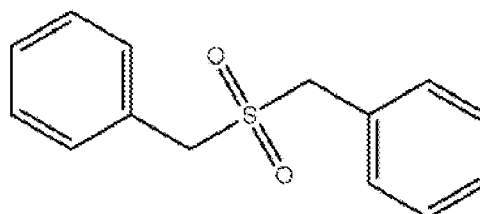
Butadiene Sulfone



tetramethylene sulfone



4-fluorophenyl sulfone



benzyl sulfone

ChemDraw Ultra 12.0 Name to Structure Conversion generated 8/19/10

Further evidence that applicant has not in fact invented an electrolyte according to Formula 1, wherein R and R' are a C₃ or C₄ alkenyl group is the fact that not a single working example discusses Propenyl Sulfone or Butenyl Sulfone. The

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working examples only focus on Methyl Sulfone, Vinyl Sulfone, Phenyl Sulfone, 4-Fluorophenyl Sulfone, Butadiene Sulfone and Tetramethylene Sulfone (see table 1). Nor is there any disclosure of Propenyl Sulfone or Butenyl Sulfone being contained in an electrolyte in a range of 0.05 to 0.5 wt% (claims 1 and 11) or 0.1 to 5 weight% (claim 15). In fact the only disclosure of any sulfone in an electrolyte in the range of 0.05 to 0.5 wt% is vinyl sulfone (see figures 1-4, page 12 and Table 5) which has been removed from the instant claims, the majority of the specification actually focuses on vinyl sulfone especially when comparing to the comparative example (figure 1) or showing any other results (figures 2-4). There is a generic disclosure of a sulfone based organic compound added in a range of 0.1 to 5 weight% to an electrolyte on page 6, lines 1 and 2, however again this generic disclosure refers to the infinite number of permutations available from the laundry list disclosed on page 5, there is no specific disclosure of Propenyl Sulfone or Butenyl Sulfone being added to an electrolyte in this range. Furthermore claims 11 and 15 recite an infinite number of permutations that are possible for the generic formulae and the instant specification does not provide enough evidence that applicants had possession of each and every single infinite permutation possible as recited in the claims.

It is further submitted that due to the lack of Written Description support as clarified above applicants have failed to put the Public in possession of applicants instantly claimed and elected invention and applicants have failed to promote the progress of useful arts by ensuring that the instantly claimed and elected invention is adequately described in the instant specification to allow a

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skilled artisan to make the instantly claimed and elected invention in exchange for the right to exclude others from practicing the instantly claimed and elected invention for the duration of a patent term if granted. See MPEP 2163.

Therefore the instant Specification does not provide sufficient detail that one skilled in the art can reasonably conclude that the instant inventors had possession of the instantly claimed and elected invention. Furthermore applicants have not pointed out where an electrolyte containing Propenyl Sulfone or Butenyl Sulfone in the above weight percentage ranges can be found in the instant specification to show that applicants had possession of the instantly claimed and elected invention.

It is noted that instant claim 1 and the claims that depend on claim 1 generically recites a sulfone based compound that may be C₃ to C₄ alkenyl functional sulfones, this generic disclosure is broader than Formula 1 of the instant specification because there is no recitation anywhere in the claim that defines how the sulfones are functionalized. Therefore the amendment in claim 1 appears to contain New Matter because this recitation is broader than the scope of the specification and no disclosure of C₃ to C₄ alkenyl functional sulfones can be found anywhere in the instant specification and applicants have not stated where the “functional sulfones” disclosure can be found in the instant specification.

It is noted that none of the non-elected species Methyl Sulfone, Phenyl Sulfone, 4-Fluorophenyl Sulfone, Butadiene Sulfone and Tetramethylene Sulfone

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are disclosed as being used in an electrolyte in the range of 0.05 to 0.5 wt%, see table 1.

It is suggested that applicants file a divisional application containing the Non-elected species Methyl Sulfone, Phenyl Sulfone, 4-Fluorophenyl Sulfone, Butadiene Sulfone and Tetramethylene Sulfone contained in an electrolyte in the amounts disclosed in Table 1 of the instant specification. This would avoid future notices of non-compliant amendments and rejections under 35 U.S.C. 112, first paragraph, and thereby advancing prosecution.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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Claims 1-4, 8, 10, 11 and 15 are rejected under 35 U.S.C. 102(a/e) as being anticipated by U.S. Pre-Grant Publication No. 2003/0148190 hereinafter Hamamoto.

Hamamoto teaches an electrolyte for a lithium secondary battery comprising a non-aqueous organic solvent that includes ethylene carbonate and at least dimethyl carbonate or methylethyl carbonate, a sulfone based compound that is functionalized with a C₂ to C₁₂ alkenyl group, more specifically a C₂ to C₆ alkenyl group or even more specifically an isopropyl group (i.e. C₃), wherein the sulfone based compound is present in an amount from 0.01-20 wt% and more specifically 0.1-10 wt% (which overlap with the ranges as recited in claims 1-3), and gamma butyrolactone in an amount 5-75% by volume (abstract, paragraph [0008]-[0011], [0015]-[0027]). With regards to claims 11 and 15, due to the breadth of the infinite number of permutations recited in instant claims 11 and 15 Hamamoto reads on the claim as recited, see citations above.

Claims 1-4, 8, 10, 11 and 15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Pre-Grant Publication No. 2001/0009744.

Claims 1-4, 8, 10, 11 and 15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 2001-223024 as provided by applicants on 10/18/07 (U.S. Pre-Grant Publication No. 2001/0009744 is used as the English Equivalent document).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4, 8, 10, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto.

In the alternative Hamamoto teaches the claimed invention as well as overlapping ranges of the amount of the sulfone based compound with the ranges as recited in the instant claims. It would have been obvious to one of ordinary skill in the art at the time of invention to select the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HODGE whose telephone number is (571)272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on (571) 272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Hodge/
Primary Examiner, Art Unit 1729